Integrating Mobile Devices Into the Nursing Classroom

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ABSTRACT

Mobile device usage is widespread among nursing students today. Utilizing these devices in nursing education may enhance learning by helping to create a learner-centered approach. Engaging in educational activities, virtually anywhere, creates learning opportunities outside the confines of a traditional classroom. Nursing faculty may need guidance on how to effectively introduce mLearning activities. The impact on learning from mobile devices is pronounced and could be augmented by developing pertinent activities for prelicensure nursing students to facilitate academic success.

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Nursing education programs across the United States are experiencing the constant changes brought by the way in which technology is being utilized. Most recently, today's students have been witnesses to the exponential growth and processing power of mobile devices. The use of such devices has become more commonplace as the demands for greater connectivity, communication, and applications have risen. Individuals desire a more connected experience in this unique wireless society. Instant access to knowledge and application utilities brings about an abundance of opportunities that have revealed a new frontier for mobile learning (mLearning).

Background

Current Trends

According to the Pew Research Internet Project (2014), there are three driving forces that have brought today's society into the "Connected Age." They are greater access to broadband, mobile connectivity and the concept of anytime/anyplace, and the presence of social media and social networks in all our lives. It is estimated that 90% of adults have cell phones, and 70% of teens (ages 13 to 17 years) and 79% of young adults (ages 18 to 24 years) own smartphones. In addition, 73% of adults use social networking sites, 64% of social media users log in at least once a day with almost 50% using smartphones to log into their social networks (Pew Research, 2014). Furthermore, the Educause Center for Applied Research (2012), survey on Mobile IT in higher education, noted that 67% of surveyed students believe that mobile devices are critical to their academic success and use their devices for academic activities.

Mobile Technology

The development of mobile technology in relationship to learning potential has led to new and exciting paths not only in nursing education but also in many other disciplines. Combining mobile devices' features and conveniences, users are provided with opportunities to instantaneously access important information to solve problems (Ting-Ting, 2014). Research supports the use of mobile technology within the learning environment (Wu, Wu, Chen, Kao, & Lin, 2012). Several studies have noted the potential afforded to learners through the use of mobile devices, such as enhanced learning that caters to all styles of learning (verbal, visual, and kinesthetic; Mann, Medves, & Vandenkerkohf, 2015). Another benefit of incorporating mobile technology into nursing education is converting the classroom from a teacher-centered approach to a learner-centered approach (Thompson, 2013).

Mobile technology can be defined in many different ways. A common definition is any portable device that has computing ability (Zayim & Ozel, 2015). Some of the current popular devices on the market include smartphones, tablets, e-readers, and netbooks (Ozdamli & Cavus, 2011). In addition, mobile devices offer an advantage to users through their ability to provide constant access to information at any time. Educators, clinicians, and students are increasingly using innovative methods with

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mobile devices to access clinical resources in the classroom and clinical setting (Mann et al., 2015). For example, Wyatt et al. (2010) conducted a qualitative study exploring nurse practitioner students' use of mobile devices in the clinical setting. All students reported that mobile devices were beneficial tools in accessing information, regardless of learning style.

Mobile Learning (mLearning)

Widespread ownership of mobile devices and the increasing availability of other portable and wireless devices have been changing the landscape of technology-supported learning. Use of these technologies turns out to be well aligned with strategic educational goals of improving student retention and achievement, supporting differentiation of learning needs, and reaching learners who would not otherwise have the opportunity to participate in education (Kenny, Van Neste-Kenny, Park, Burton, & Meiers, 2009). mLearning offers an opportunity to bring the educator, student, and resources together virtually at the point of care to encourage student safety and evidence-based practice.

Multiple definitions for mLearning in nursing education can be found in the literature; however, there appears to be no consensus on one single definition for mLearning. For example, according to Lan and Sie (2010), mLearning can be termed as a type of learning model that allows learners to obtain learning materials anywhere and anytime using mobile technologies and the Internet. In 2007, Traxler defined mLearning as the personalized, connected, and interactive use of handheld computers in classrooms, in collaborative learning during fieldwork, and in counseling and guidance. According to Lea and Callaghan (2011), mLearning is the use of emerging technologies to enhance students' learning experiences. For the purpose of this discussion, mLearning will be defined as the use of mobile devices for the enrichment of student learning experiences.

Regardless of how you define mLearning, research has demonstrated the potential that it yields in education. Hashemi, Azizinezhad, Najafi, and Nesari (2011) noted the current ambiguity of mobile. In other words, does mobility refer to technologies or to the notion of learner mobility? One important element is to understand the mobility aspect these devices create for users. Recent technologies have afforded learners the opportunity to supersede time and geographical boundaries. This has given the learner a greater degree of independence versus that of the traditional four walls of a classroom.

Mobile Device Use in Nursing Education

Mobile devices are used frequently by nursing students and can have an enormous impact in the classroom and clinical setting (Doyle, Garrett, & Currie, 2014; Mann et al., 2015; Martyn, Larkin, Sander, Yuginovich, & Jamieson-Proctor, 2014; Skiba, 2010). The popularity of these devices among students can add some diversity for teaching various facets of nursing education. For example, Ting-Ting and Tien-Wen (2014) described benefits of using mobile devices and cloud learning, with Google + as the learning platform in a public health practice course during patient home visits.

The learning platform, Google +, is part of a cloud concept or cloud computing, which refers to an application for Internet users to store data files, have access to hardware and software, and have the ability to access or share from any location without expensive network system maintenance. When students use a cloud system, it is referred to Cloud Learning and allows for engaging learning experiences (Ting-Ting & Tien-Wen, 2014). In addition, all course information could be accessed from mobile devices. Students needed a Google account with strong privacy settings, and these users could exchange information, plan their home visits, share documents needed during their visits, and ask questions when facing obstacles, which

all students could see and provide responses. The learning platform also allowed faculty to monitor and interact with students with home visit situations as soon as data were inputted. The group of students who participated in the experimental group by utilizing these resources reported satisfaction and positive attitudes about mLearning compared with the control group who only used paper-based documents at the home visits (Ting-ting & Tien-Wen, 2014). The researchers analyzed learning effectiveness and found that the experimental group had greater learning effectiveness than the control group.

Creation of a mobile application for self-assessment by nursing students is an additional illustration of mobile devices' value in nursing education (Ortego et al., 2011). The tool was designed to allow students to quiz their knowledge at any time or place and for use as a supplement to classroom instruction. Nursing faculty designed questions related to the content and learning objectives and uploaded them into this system. The questions were designed in only one format of multiple choice for this application, but this self-assessment tool can provide an example of how to use mobile technology. Achievement and attitude were measured. When comparing the experimental and control groups, there were not significant differences in achievement of learning objectives. However, when measuring attitude, students were positive in reporting their experiences with this mLearning activity (Ortego et al., 2011).

An additional exemplar was reported by Keegan et al. (2016) with mobile device simulation as an activity prior to class. New instructional material can be integrated into preclass activities and employ students in active learning. Nursing students were assigned reading material; about 40% of the students were also assigned a simulation scenario to be completed on their mobile devices prior to class (Keegan et al., 2016). All 84 students were administered a quiz after their class lecture on electronic fetal monitoring, and students completing the simulation activity scored higher on the quiz than students assigned only the reading task (Keegan et al., 2016). Students also reported that mobile simulation was more useful than customary reading activities. With the overwhelming amount of content in nursing curricula, preclass activities with mobile devices can promote engaged learning and improve student outcomes.

Proficiency and Gaps in mLearning

Differences in proficiencies among adult learners may be the result of wide-ranging personal variables (Hallin, 2014). Martyn et al. (2014) reported in their study that technology use may differ widely among students. Some students perceived themselves as not proficient enough in the use of their personal mobile device to use them in the classroom. Students gave accounts of having a spouse or a child to help them use their mobile device for learning. This was considered counterproductive by many of students, leading to the discontinuation of using their mobile device for learning. Martyn et al. (2014) also reported a disadvantage experienced by older adults who found the screen size of the mobile device to be too small and difficult to see. This led students to use a different type of device to print out the information rather than using their mobile device. Growing opportunities offered by mobile devices in acquisition of knowledge used in learning promote the need for further research on gaps in proficiency and use.

Self-efficacy is considered to be a major contributor to whether educators and students will be confident and proficient in an mLearning environment. Kenny, Van Neste-Kenny, Burton, Park, and Qayyum (2012) conducted a study to determine the effect self-efficacy has in the use of mobile devices in learning. Self-efficacy was found to correlate with the amount of use with a mobile device that increased self-confidence in both nursing faculty and students (Kenny et al., 2012). With the multigenerational differences that

exist among nursing faculty and students, the use of mobile devices is likely dependent on the confidence of use, regardless of age. Hallin (2014) recommended that further research is indicated to determine differences in learning preferences among students who have "grown up" with devices in the home as compared with those who have not. After the review of literature, the gaps of use and proficiency of use in mobile devices and mLearning are closely linked to self-efficacy among educators and students alike.

Conclusion

Mobile devices in the classroom may provide another innovative avenue to advancing knowledge and skills with nursing students. Specific examples of mobile device have been discussed throughout this article. Program use may vary; however, educators must consider the usefulness of mLearning for their students. As mobile devices become more prominent in our world, this suggests how integral they are to the knowledge delivery system in the classroom and keeping students engaged in learning.

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